UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/689,333	10/20/2003	Jian Chen	SAND-01012US0	4179

28554	7590	05/15/2006

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EXAMINER
LE, THONG QUOC

ART UNIT	PAPER NUMBER
2827	

DATE MAILED: 05/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on _03 January 2006_.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-57_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) _1-24,46 and 47_ is/are allowed.

6)☒ Claim(s) _25-27,34,36-38 and 44_ is/are rejected.

7)☒ Claim(s) _28-33,35,39-43 and 45_ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

1.   Amendment filed on 01/03/2006 has been entered.

2.   Claims 1-57 are presented for examination.

Response to Arguments

3.   Applicant's arguments with respect to claims 1-57 have been considered but are

moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

4.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act

of 1999 (AIPA) and the Intellectual Property and High Technology Technical

Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting

directly or indirectly from an international application filed before November 29, 2000.

Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior

to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

5.   Claims 25-27,34,36-38,44 are rejected under 35 U.S.C. 102(e) as being

anticipated by Hamilton et al. (U.S. Patent No.6,735,114).

Regarding claim 25, Hamilton et al. disclose a method for programming non-volatile memory (ABSTRACT) comprising: applying initial programming (Figure 4) to non-volatile storage elements until at least one non- volatile storage element reaches a target threshold value (Column 3, lines61-67, Column 4, lines 1-10); and subsequently adjusting programming of at least a subset of non-volatile storage elements that have not reached said target threshold value based on behavior of said non-volatile storage elements that have not reached said target threshold value (Column 7, lines 19-67, Column 8, lines 1-20, Column 11, lines 35-65).

Regarding claim 26, Hamilton et al. disclose further comprising characterizing said non-volatile storage elements that have not reached said target threshold value based on programmability, said step of adjusting is based on said step of characterizing (Figure 6, 66, 67, Column 11, lines 55-60).

Regarding claim 27, Hamilton et al. disclose wherein: said step of characterizing includes comparing a predetermined threshold voltage to threshold voltages for said non-volatile storage elements that have not reached said target threshold value (Column 7, lines 11-18).

Regarding claim 34, Hamilton et al. disclose wherein the non-volatile storage elements are multi-state storage elements (Column 7, lines 40-46).

Regarding claim 36, Hamilton et al. disclose a system (Figure 1) for programming non-volatile memory, comprising:

a set of non-volatile storage elements (Figure 1, 4) ;

control lines in communication with said set of non-volatile storage elements (Figure 1, lines between 4 and 12) ; and

a controlling circuit (Figure 1, 12) in communication with said control lines, said controlling circuit causes initial programming of said non-volatile storage elements until at least one non-volatile storage element reaches a target threshold value (Column 3, lines61-67, Column 4, lines 1-10); and subsequently said controlling circuit causes adjustment of programming of at least a subset of non-volatile storage elements that have not reached said target threshold value based on behavior of said non-volatile storage elements that have not reached said target threshold value (Column 7, lines 19-67, Column 8, lines 1-20, Column 11, lines 35-65).

Regarding claim 37, Hamilton et al. disclose wherein: said controlling circuit causes characterization of non-volatile storage elements that have not reached said target threshold value based on programmability, said adjustment of programming is based on said characterization (Column 7, lines 11-18).

Regarding claim 38, Hamilton et al. disclose wherein: said characterization includes comparing a predetermined threshold voltage to threshold voltages for said non-volatile storage elements that have not reached said target threshold, said predetermined threshold voltage is lower than said target threshold value (Figure 4, Column 2, lines 10-20).

Regarding claim 44, Hamilton et al. disclose wherein the non-volatile storage elements are multi-state storage elements (Column 7, lines 40-44).

Allowable Subject Matter

6.   Claims 1-24, 36-57 are allowed.

Claims 1-24, 46-57 include allowable subject matter since the prior art made of

record and considered pertinent to the applicant's disclosure does not teach or suggest

the claimed limitations. Hamilton et al. (U.S. Patent No. 6,735,114), and others, does

not teach the claimed invention having a method and an apparatus of system for

programming non-volatile including a controlling circuit in communication with the

control lines, the controlling circuit cause a categorizing of particular non-volatile storage

elements into three or more different groups, each particular non-volatile storage

element being categorized into one of the different groups on its detected behavior, and

causes programming of each of the particular non-volatile storage elements using a

different programming condition for each of the different groups as claim 1-24 disclosed

and while applying said one or more non-zero source voltages, characterizing threshold

voltages of said set of non-volatile storage elements by applying one or more positive

voltages to control gates for said non-volatile storage elements and determining

whether said non-volatile storage elements turn-on in order to determine whether said

non-volatile storage elements have a threshold voltage greater than a compare point as

claims 46-57 disclosed.

7.   Claims 28-33,35, 39-43,45 are objected to as being dependent upon a rejected

base claim, but would be allowable if rewritten in independent form including all of the

limitations of the base claim and any intervening claims.

Claims 28-33,35, 39-43,45 include allowable subject matter since the prior art made of record and considered pertinent to the applicant's disclosure does not teach or suggest the claimed limitations. Hamilton et al. (U.S. Patent No. 6,735,114), and others, does not teach the claimed invention having a method and an apparatus of system for programming non-volatile including a step of adjusting includes raising bit line voltages for non-volatile storage elements that have the threshold voltages greater than predetermined threshold voltage as claims 28-33,35,39-43,45 disclosed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thong Q. Le whose telephone number is 571-272-1783. The examiner can normally be reached on 8:00am-5:00pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zarabian Amir can be reached on 571-272-1852. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Thong Q. Le
Primary Examiner
Art Unit 2827